

AMERICAN MUSEUM NOVITATES

Published by

Number 1317

THE AMERICAN MUSEUM OF NATURAL HISTORY
New York City

April 4, 1946

THE GENUS *QUICHUANA* KNAB

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This genus contains a small number of characteristic and yet vaguely defined syrphids from the Neotropical region. The genus was originally erected by its author for two species. However, at least five other syrphids of older authors, described in other genera, have in recent years been reassigned to the genus *Quichuana*. In addition, I find that *Lepidomyia cincta* Bigot, previously placed in *Cheilosia*, may be added to *Quichuana* upon the basis of an examination which I made of the type while visiting the British Museum.

I wish to thank Dr. C. H. Curran who lent the American Museum collection and Dr. C. L. Fluke, who lent his own material in this genus to me for examination. I have studied and carefully drawn the types of most of the described species. The adults appear to be not uncommon, and Knab noted that the larvae live in water collected by *Bromelia* plants and possibly other epiphytes in the tropics, a habit not dissimilar to that of *Nepenthosyrphus* de Meijere (Java), the larvae of which inhabit the pitcher plants of *Nepenthe*.

THE CHARACTERISTICS OF THE GENUS *QUICHUANA*

Quichuana KNAB, 1913, *Insecutor inscitiae menstruus*, vol. 1, p. 1.

Small to medium sized, rather pilose and elongate flies, with pilose, holoptic eyes, the pile of head and eyes tending somewhat towards scaliform. The face is weakly tuberculate in both sexes and ornamented to some extent with characteristic arrangements of pile and pubescence. The antennae are elongate to a varying degree. The abdomen is slender in most species with nearly parallel sides that gently taper to the apex. The legs are relatively simple, with the hind femora moderately thickened. The venation of the wings is similar to *Helophilus*; the kink in the third vein is not unusually deep; the marginal cell is open; the anterior border of the wing is usually dark brown.

GENOTYPE: *Quichuana sylvicola* Knab.

The genus *Quichuana* appears to be most closely related to *Myiatropa* Rondani, a European genus, and to *Helophilus*. From both of these it differs in having elongate antennae, and from *Helophilus* in having

holoptic and pilose eyes in the male. Knab points out that it further differs from *Myiatropa* in having thickened hind femora and arcuate tibiae. The pilose eyes seem to be the principal difference separating it from *Habromyia* Williston. Nevertheless, the species of *Habromyia* are larger, rather bare, and often brightly marked, whereas *Quichuana* is without exception relatively pilose and dull colored. The pile in some species approaches the yellow, opaque, scalose, or flattened tomentum of *Meromacrus*, in which the eyes are bare and the marginal cell closed, but in *Quichuana* the pile is usually sericeous. In the past the flies of this genus have been confused with *Mallota*, *Helophilus*, *Platynochaetus*, *Xylota*, and *Cheilosia*. While the identity of the species in this genus is established with considerable difficulty because of the near resemblances of many forms, close study indicates that there are not a few characters which are available for separating one species from another. Further investigations of the pattern of the thorax, degree of incrassation of the fem-

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ora, their surface and pile, and the shape of the antennae should be helpful.

Because of certain differences in the sexes, I present a key to each sex as far as material is available. As the key was prepared after my return from the British Museum, I have been unable to key *cincla* and *subcostalis*. I have not seen *parisii*, *rieseli*, or the recently described *borgmeieri*.

TABLE OF SPECIES OF THE MALES OF
Quichuana

1. Wings with a white spot at apex, the brown border diffuse, the frontal pile long and golden, the ground color not obscured (Panama).....
.....*calathea* Shannon
No such spot on wings.....2
2. Front with a dense mat of long, anteriorly directed, golden or brassy pile, quite obscuring the ground color (Peru, Brazil, Colombia).....
.....*auratus* Walker
Pile yellow, golden, or blackish, never sufficiently thick and matted to mask the ground color completely.....3
3. Face and front shining black; scutellum obscurely yellowish with yellow pile; abdomen largely shining metallic bronze (Mexico).....
.....*championi* Williston
Face largely pubescent with one or more bare stripes.....4
4. Face with only the median stripe....5
Face with the median, and, on either side, a lateral stripe that may be wide or narrow.....6
5. Legs, including the whole of the hind femora and tibiae, black (Brazil)....
.....*bezzii* Ceresa
Hind tibiae and tarsi dark brown; pile of the apices of hind tibiae black; frontal pile long, appressed, golden, not obscuring the ground color; hind metatarsal pile black (Colombia)....*quixotea*, new species
6. Front with entirely long, golden pile; hind basitarsal segment light brownish orange and golden pilose; apices of hind tibiae golden pilose; lateral face stripes broad but isolated (Bolivia).....*dolorosa*, new species
Front in part black pilose or wholly

- black pilose; pile of hind basitarsal segment black or yellow.....7
7. Facial side stripes less extensive, leaving well-developed areas of pubescence; scutellum dark brown, heavily pilose; hind tibiae at least brown in the center.....8
Bare side stripes of face large, almost obliterating the pubescence on the sides of the face, leaving a thin band anteriorly and along the anterior cheek margin; scutellum dark brown, reddish at apex, its pile quite sparse; hind tibiae and tarsi light brownish red throughout, the pile of their basitarsi in large part yellowish; antennae wholly jet black (Peru, Colombia).....9
 8. Antennal base quite prominent; lateral stripes of face short and relatively broad; face itself short below and somewhat rounded; more robust species (Brazil)....*pogonosa* Fluke
Antennal base not conspicuously produced; lateral facial stripes long and slender, reaching much higher than the middle one; face more produced at epistoma, subrectangular; more slender species (Costa Rica).....
.....*picadoi* Knab
 9. Second antennal segment fully twice as long as the first; third antennal segment twice as long as the second; abdomen of male narrower at base than apically (Peru)..*inca* Shannon
Second antennal segment about one and one-half times as long as the first; third antennal segment about one and one-half times as long as the second; abdomen of male wider at base than apically (Colombia).....*inca brevicera*, new variety

TABLE OF SPECIES OF THE FEMALES OF
Quichuana

1. Face in profile produced deeply and rather sharply downward; dark pattern of wing filling out the whole of first basal cell and the entire end of the submarginal cell but not extending below it or its loop (Mexico).....
.....*niger* Giglio-Tos
Face short, never subconically pointed;

- the brown of the wings usually dilute at the apex of the submarginal cell, or extending below and beyond this, the apex of the wing occasionally with a white spot. 2
2. Face with only a medial bare stripe; face otherwise pubescent. 3
- Face with a medial bare stripe and, in addition, either with a well-differentiated lateral bare stripe in the pubescence or, more rarely, with the lateral bare areas restricted to an elongate, bare patch on the upper side of the face near the antennae. 6
3. Antennae relatively short, the third segment about one and one-half times as long as wide. 4
- Antennae elongate, the third segment a little more than twice as long as wide, brown in color, the first two segments lighter; medial facial stripe wide, stopping some distance from the antennae but reaching the epistoma; basal halves of abdominal segments 3 and 4, or all but the postmargin, erect and short yellow pilose, the posterior halves or less of these segments appressed black bristly. Wing apex sometimes with a white spot. 5
4. Midfacial stripe conspicuous, but not reaching the antennae or epistoma; the brown of the wing fills out only the end of the submarginal cell; face short, but produced a little downward, with small tubercle on the lower part; eyes heavily pilose (Brazil). *parisii* Ceresa
- Midfacial stripe almost wanting, at least not conspicuous; face produced farther forward, less below, concave and without tubercle; eyes lightly pilose (Brazil). *bezzii* Ceresa
5. Pile of front abundant upon the anterior half of the front before the antennae and chiefly blackish, or at least dark brown, and almost matted. Face retreating, the antennal prominence of the front produced (Panama). *calathea* Shannon
- Pile of lower front quite sparse and entirely golden; face less retreating (Colombia). . . . *quixotea*, new species
6. First abdominal segment with conspicuous, laterally directed tufts of long whitish or golden appressed pile on either side. 7
- This segment with at most a few long hairs near the extreme lateral margins, the middle of the first segment with microscopically short, appressed, whitish hairs or pubescence and without conspicuous tufts (Costa Rica). *picadoi* Knab
7. Fourth and usually the third abdominal segments wholly yellow pilose, erect or appressed. 8
- These in part black pilose at least posteriorly, sometimes widely so. . . . 10
8. Hind tarsi, tibiae, and apical third and sometimes the base of the hind femora light red. 9
- Hind femora except extreme apex black; their tibiae brownish black apically, with yellow pile, dark red basally; lateral facial stripes quite wide, especially below (Peru). *simonetta*, new species
9. Base of hind femora light reddish; lateral facial stripe narrow; third and fourth abdominal segments chiefly erect, yellow pilose, the pile becoming appressed near the posterior border, and typically with only five or six apical black hairs; fifth abdominal segment sparse, long, erect, typically black pilose, with two or three yellow hairs on apical margin, occasionally all its pile yellow (Bolivia). . . *knabi* Shannon
- This base black; lateral facial stripe quite wide, the cheek-face band of pubescence very narrow; brown of wing sharply marked; the pile of hind basal tarsal segments wholly yellow (Peru, Colombia). *inca* Shannon
10. Abdomen quite broad and robust; brown of wing not filling any of the apical posterior half of the first basal cell. 11
- Abdomen of the usual slender, tapering type. 12
11. Pile of scutellum long, appressed,

dense; mesonotum not conspicuously vittate, though vittae are present obscurely; second abdominal segment wholly yellow pilose; hind tibiae chiefly black pilose on inner as well as on outer face (Venezuela)... *cestus*, new species

Pile of scutellum sparse and erect; mesonotum with the usual four gray vittae, the lateral ones less pronounced; second segment of abdomen narrowly black pilose behind; hind tibia chiefly yellow pilose (Brazil)... *pogonosa* Fluke

12. The base of the wing and the anterior margin including the costa deep sepia brown; brown wing border dilute shortly beyond small cross vein (Panama)... *sepiapennis* Hull

The anterior wing margin, and especially the costa, dilute brown. . . 13

13. The front black and rather appressed pilose anteriorly, then erect, golden pilose, and finally erect, black pilose about the ocelli; lateral facial stripe confined to the upper half of face; brown of wings dilute, the costal cell dark (Amazon).....

..... *auratus* Walker

The front is sparsely pilose, black or yellow, the pile largely or wholly erect; the costal cell pale..... 14

14. Abdominal segments 3 and 4 yellow pilose on the basal three-fourths or more, black posteriorly; fifth abdominal segment wholly sparse, long black pilose; third antennal segment one and one-half times as long as the second; pile of the front almost wholly yellow; hind femora narrowly red distally; hind tibiae unusually arcuate (Costa Rica)....

..... *picadoi* Knab

Abdominal segments 3 and 4 very narrowly yellow pilose basally; fifth abdominal segment appressed black pilose; third antennal segment twice as long as the second or nearly so; front with sparse, long, black pile throughout the middle; hind femora with a small, elongate, apical, reddish spot (Peru).....

..... *sylicola* Knab

Quichuana cestus, new species

Figures 4, 14, and 16

FEMALE

Abdomen quite broad basally, and with flattened, laterally directed tufts of brassy yellow pile on the first segment; most of the abdomen with brownish gold pollen. Length, 11 mm. Related distantly to *auratus* Walker.

HEAD: The vertex is shining black with thick black pile in front and behind; the occipital pile, however, is bright, brassy golden with some long black hairs inside the golden ones along the upper eye margin. The front is shining black with black pile throughout the center, rather long, thick, and erect but with a narrow band of golden pile along each eye margin that also contains golden pubescence; a few of these hairs are erect, but more of them are appressed. The eyes are thick, highly shining whitish pilose, more yellowish pilose dorsally. The antennae are black, the first two segments jet-black and shining with black pile; third segment large, about one and one-half times as long as wide, broadly rounded apically; arista light red throughout. The face is shining black with yellowish white pubescence as shown in figure 14. The face is covered with extensive, long, shining, sulphur yellow or brassy pile except upon the bare middle stripe.

THORAX: Mesonotum dully shining black, overlaid with dark, olive brown pollen; throughout the center, a pair of wide, almost contiguous, light, olive brown pollinose vittae, which are evanescent before the scutellum. The humeri are shining black with a patch of brownish yellow pollen medially. The pile of the mesonotum is very thick and dense, appressed, rather long and entirely brassy yellow. There is a thicker, longer tuft of bright pile on the notopleura and another on the extreme upper part of the mesopleura, which is continued more sparsely down the mesopleura. The scutellum is concolorous, with similar but longer and posteriorly directed pile. The squamae are brown, dark brown on the posterior half, with light brown fringe.

LEGS: Black; the hind femora are moderately thickened and have yellow pile except on the lateral and dorsal portions distally, where the pile is black. The ventral, distal pile consists of both short and long black bristles and along the ventral margin laterally there are seven or eight very long, slender, golden hairs. The pile of the hind tibiae is chiefly golden dorsally and laterally but black along the ventral margin; the hind tarsi are very dark brown.

WINGS: With brown anterior margin, the loop of the submarginal cell entirely clear. The small cross vein is margined with brown, the marginal cell very widely opened.

ABDOMEN: Quite broad, relatively short, and pointed apically; it is at least as wide as the thorax and is everywhere dully shining brownish black. The first segment has outwardly directed, long yellow pile in the posterior corner, and on the posterior margin toward the middle there is a transverse, thick, appressed tuft of long, outwardly directed, bright, brassy yellow pile. The pile of the second segment is entirely bright brassy, very thick and suberect. The pile of the third segment is similarly colored on the basal half and whole lateral margins but is appressed black posteriorly. The pile of the fourth segment is similar to that of the third, the golden basal pile a little less extensive, the black posterior pile more suberect. The pile of the fifth segment is almost wholly black, with a few yellow hairs along the base.

TYPE: Holotype, female, Mt. Duida, Venezuela, January 11, 1929. In the American Museum of Natural History.

***Quichuana simonetta*, new species**

Figures 3 and 7

FEMALE

Antennae unusually large, and the third segment elongate; abdomen broad but oval and wide, also apically; abdomen short pilose, the pile wholly pale and appressed. Length, 11 mm. Related to *knabi* Shannon.

HEAD: The occiput and the vertex and front are shining black; the upper part of

the front is obscured by light yellowish or brownish white pollen; the pile of the front is erect, long, rather sparse, and yellowish white. There is some black pile in front of the ocelli and there are a few long hairs behind, but the occipital pile is yellowish white. The front is very prominent and the antennal base protrudes quite strongly. The facial profile is shown in figure 3. The face and cheeks are shining black, thinly covered with grayish yellow pubescence which leaves a middle stripe attenuated above, and a wider lateral stripe bare and shining as shown in figure 3. The pile of the face is long, sparse, shaggy, and pale yellow. The antennae are quite long and large, the third segment is nearly two and a half times as long as wide, and all the segments are black; the medial pile of the second segment is brassy, the lateral pile black; the arista is thickened and light reddish brown.

THORAX: Moderately shining black with abundant, subappressed, golden pile and a transverse band of black pile between the wings; the anterior part of the posterior calli has black short pile. The scutellum is dark reddish brown to black, with brassy yellow pile that is fairly sparse.

LEGS: Femora shining black, the hind pair moderately thickened, their apex narrowly reddish, their pile entirely light yellow including the apex but excepting a patch of short, black, ventral spinules upon the distal third. On the outer surface of this patch there are several long black bristles. The hind tibiae are dark reddish brown on the basal half, almost black apically; their pile everywhere whitish except for a few black hairs on the ventral surface just past the middle. The hind basitarsi are light reddish brown with chiefly yellowish white pile and a few black hairs above and a few more upon the anterior margin. The remaining segments are dark brown. The anterior and middle tibiae are chiefly black, the bases of the mid-tibiae are reddish, their tarsi dark brown, their pile is whitish.

WINGS: Nearly hyaline with a very dark brown border terminating at the end of the submarginal cell; the costal cell, however, is very pale brown, almost hyaline. In

the first basal cell, the brown border fills out only that part of the area lying above the vena spuria which is proximal to the nodal spot, and of that area above the vena spuria which comprises the distal section of this cell the brown color fills out only the upper half. The upper basal corner of the first posterior cell is brown, the loop of the submarginal cell is entirely clear.

ABDOMEN: Broader than is usual in the genus, but the sides of the first three segments are nearly parallel and only a little narrower apically. There is, on the posterior margin of the first segment, on either side of the midline, a tuft of sparse golden hairs, appressed and directed outwardly.

TYPES: Holotype, female, and two paratypes, females, Huanoabana, Peru, 1500 meters.

The type and one of the paratypes were returned to the Naturhistorisches Museum in Vienna; one paratype is in the author's collection.

Quichuana dolorosa, new species

MALE

Characterized by wholly golden pile of the front, the ground color not obscured, and also by the light brownish orange hind basitarsi, which are golden pilose. Length, 9.5 mm. Related to *auratus* Walker.

HEAD: The vertex is shining black; there is a tiny triangle of pale yellow pubescence anteriorly upon the vertical triangle; the eyes touch for a distance equal to two to three times the length of the anterior ocellus; the occipital pile is golden and there is a tuft of long black hair between the ocelli; the front is shining black with only thick, long, forwardly thrust, golden pile which, while quite abundant, in no wise obscures the ground color. The face and cheeks are shining black with three bare black stripes; the lateral ones are a little wider than the median one and entirely enclosed by the pale yellowish white pubescence. The pile of the face is abundant, long, and golden. The antennae are elongate, the third segment twice as long as wide and light grayish brown, the base is orange brown, the arista more slender and pale orange throughout;

the first two antennal segments are black with golden pile on the inside and a few black hairs dorsally. The eyes have thick brown pile above, but sparse, glistening, whitish yellow, scale-like pile over the lower three-fourths of the eyes.

THORAX: The mesonotum is dull, dark, olive brown or greenish gray with a single, opaque, black, anteriorly slender, medial vitta that becomes a little wider throughout the length of the dorsum. There is a similar, wider, though slightly less distinct vitta on either side upon the lateral portion of the mesonotum. It is divided at the transverse suture, and both sections are pointed at their opposite ends. The pile of the mesonotum is exceedingly thick, fairly long, nearly erect, and bright golden. It is almost matted, and there is a matted tuft of more opaque pile upon the notopleura, continuing down upon the upper part of the mesopleura. The very dark brown, feebly shining scutellum is similarly colored with long, very thick, shining brassy pile.

LEGS: All the femora are black, the hind femora moderately thickened, with thick golden pile above and a number of short black hairs at the extreme apex, and a ventral patch of stout, black, spinous bristles on the ventral distal third. There are a few longer bristles on the side of this patch. The hind tibiae are blackish in the middle but light brownish red on the basal third and upon the apex. The pile is everywhere golden except for a short row of black hairs beyond the middle upon the ventral surface. The first two to three hind tarsal segments are pale orange brown, the last two darker. The pile of the basitarsi, except for six slender black hairs, is entirely golden. The anterior legs are very similar to the hind pair, their tibiae dark brown in the middle, their femora without the black spinous bristles.

WINGS: Nearly hyaline without the brown anterior border, even the stigmal cell is hyaline, the stigmal cross vein brownish.

ABDOMEN: Broader than usual but tapering; the abdomen is short and completely covered with rather long, erect, exceedingly dense yellow pile. The hairs are

appressed on the extreme margin of the fourth segment. On either side of the first segment posteriorly there is a tuft of appressed, outwardly directed, golden pile.

TYPE: Holotype, male, from Mapiri, Bolivia, February 20, 1903 (Sarampioni), 700 meters. In the American Museum of Natural History.

Quichuana inca Shannon

Figures 11, 18, and 24

Quichuana inca SHANNON, 1925, Proc. Ent. Soc. Washington, vol. 27, p. 111.

The species *inca* is notable for the very long second antennal segment, the unusually dense, matted tuft of short, brassy yellow pile upon the apex of the first abdominal segment, with its hairs directed outward, and also for the pile of the eyes, which though sparse is more silvery and more flattened than is common. In the male the ocular fringe of short yellow pile along the sides of the front should be noted. From Huascaray, Peru.

Quichuana inca brevicera, new variety

Several specimens differ from *inca* Shannon in having much shorter segments of the antennae and an abdomen of different shape.

The second antennal segment is not over one and one-half times as long as the first, and the third segment is in the same proportion to the second. Also in the males the base of the abdomen is wider than is the apical half, whereas the type of *inca* is narrower at the base than apically. The specimens upon which this variety is based are two males from the British Museum from the Atrata Valley, Boca de Arquia, Colombia (v-vi 1914). I have also seen specimens from Bogota. The species *inca* is one in which the brown anterior border of the wing is deep and quite distinct with relatively sharp posterior margin to the brown color. Types of this variety are in the British Museum (Natural History).

Quichuana subcostalis Walker

Figures 20 and 28

Xylota subcostalis WALKER, 1860, Trans. Ent. Soc. London, new ser., vol. 5, p. 291.

The type, a female, was examined at the British Museum and its face illustrated. There is a complete white pollinose band across the front, and the frontal pile is sparse. The antennae are pale brown; the pubescence towards the apex of the third antennal segment is noticeably longer. The abdominal pile is as follows: pile upon the whole of the second segment, the basal half of the third, and nearly all of the basal half of the fourth erect. The erect basal pile is all yellow, but the erect or nearly erect pile on the posterior part of the second segment is black. The appressed pile of the third and fourth segments is black, and all pile black on the fifth segment. This fifth segment pile is longer and bristly but very delicate. There is a band of appressed yellow pile on the first segment. The hind femora are very dark, shining red, brighter at the tip. The brief description of Walker is as follows:

"Female. Black, shining; head with cinereous tomentum on each side in front; antennae seated on a tubercle; third joint elongate-conical, as long as the first and second together; thorax with four cinereous stripes, and on each side with slightly gilded hairs; pectus cinereous; abdomen lanceolate; knees ferruginous; hind femora thick; hind tibiae curved; wings grayish; with a black stripe which is sub-costal for full half the length, and costal from thence nearly to the tip; veins black; halteres whitish. Length of body 5 lines; of wings 8 lines. Mexico."

Quichuana sepiapennis Hull

Figures 1 and 5

Quihuana sepiapennis HULL, 1943, Rev. de Ent., Sao Paulo, Brazil, vol. 14, p. 510.

This species is distinguished by the deep sepia border of the wing, which shortly beyond the small cross vein becomes quite dilute and rather faint, as well as more narrowly restricted to the immediate margin. The species was described from Panama.

Quichuana pogonosa Fluke

Figure 8

Quichuana pogonosa FLUKE, 1937, Amer. Mus. Novitates, no. 941, p. 11.

The types of this species were kindly lent by Dr. Fluke. It is a very robust fly, somewhat related to *cestus*, new species. The distinctions given in the key will serve to separate the one from the other. Also before me are specimens from Rio Grande do Sul. The species was described from Nova Teutonia, Brazil.

Quichuana calathea Shannon

Figure 13

Quichuana calathea SHANNON, 1925, Proc. Ent. Soc. Washington, vol. 27, p. 111.

Because of the characteristic white opaque spot at the tip of the wing of the male, this species is quite distinct in this sex. The females are more difficult to distinguish and are easily confused with the females of *auratus* Walker and of *picadoi* Knab. Shannon states that the white wing spot sometimes occurs in the female, but I have seen no females with it, nor have I seen any males without it. My study of this species has been based upon the type and upon a crumpled paratype given me in 1925 by R. C. Shannon, in which, however, the head is in good condition though teneral. In this specimen the abundant pile of the lower front is dark brown and would certainly have been black in the fully developed adult stage. I have studied a series from Muzo and Restrepo, Colombia, and I have a male presented to me by Dr. Gunther Enderlein. It is from Cordillera V., Colombia, *tierra caliente*. In *calathea* the lateral bare stripes of the face are characteristically wholly absent. The species was described from specimens "reared from the water and material in the flower bracts of a large species of *Calathea*" at Porto Bello, Panama.

Quichuana knabi Shannon

Figures 9, 15, and 22

Quichuana knabi SHANNON, 1927, Proc. U. S. Natl. Mus., vol. 70, p. 15.

In this slender Bolivian species the pile upon the second abdominal segment is not in the least sparse. The abdominal pile, except upon the fifth segment, is almost entirely yellow and, except near the posterior margins of the segments, it is almost

wholly erect. In this respect the species is much in contrast to *inca* Shannon and *simonetta*, new species, in which the pile is largely or wholly flat appressed. The pile of the fifth abdominal segment is typically black but may be yellow.

Quichuana sylvicola Knab

Figures 10 and 23

Quichuana sylvicola KNAB, 1913, Insector inscitiae menstruus, vol. 1, p. 14.

The abdominal pile of this species alternates from black to yellow, a condition common to several species. The following notes are based on the type. Upon the second segment the pile is about evenly divided, yellow and erect on the basal half, black and appressed on the apical half; on the third segment there is black appressed pile on at least the posterior two-thirds, the anterior pile being erect and yellow; and upon the fourth segment only one-fourth to one-third of the pile is yellow and erect, the posterior pile being black and appressed. The pile of the fifth segment is entirely black. Turning to the head, the pile of the front is long but sparse; it is golden yellow on the outside but there are 12 to 15 long black hairs up and down the middle of the front. The hind femora are almost wholly shining black, with elongate reddish spot at the apex. From Peru.

Quichuana picadoi Knab

Figures 12, 17, and 25

Quichuana picadoi KNAB, 1913, Insector inscitiae menstruus, vol. 1, p. 14.

The following notes regarding this species are based on the type. The pile of the abdomen is erect except on the posterior fourth of the third and fourth segments, where it is flat-lying and black; the anterior pile is yellow. The sparse long pile of the fifth segment is entirely black. The base of the first segment has a thick, outwardly directed tuft of flat-lying, yellow pile. The front of the head has only yellow hair with the exception of a few black hairs at the apex and sides just above the antennae; the pile is rather abundant but not dense. The infuscation of the wings is characteristically very poor and weak; it is of a different pattern from *sylvicola*.

This species was described from Costa Rica. I have seen additional specimens from there, and I have seen also specimens from Colombia that seem to belong here but in which the tufts of yellow pile upon the first abdominal segment are entirely lacking, notwithstanding the fact that the specimens are otherwise fully pilose. In place of these tufts there is only whitish pubescence; it is possible that these flies are denuded.

Quichuana championi Williston

Figures 19 and 27

Mallota championi WILLISTON, 1892, *Biologia Centrali-Americana*, vol. 3, p. 69.

This is a robust species with oval abdomen which is wholly yellow pilose. The pile in the type is quite long and dense, especially long on the sides and upright on the second, third, and base of the fourth segments. The apical band of tufted pile upon the first segment is conspicuous, and the pile is partly directed forward and to the side and partly backward and to the side. The bright brassy bronze ground color of the abdomen is distinctive. The face is wholly bright shining black; there is a stripe of pubescence bordering the cheeks anteriorly. Williston was aware that his species did not properly fit into *Mallota*.

Quichuana cincta Bigot

Figures 21 and 26

Lepidomyia cincta BIGOT, 1883, *Ann. Soc. Ent. France*, ser. 6, vol. 3, p. 345 (Mexico).

Williston in his synopsis suggested that this species might be related to *Cheilosia*. The author studied the type in the British Museum and illustrated the face and found that the species should properly be transferred to *Quichuana*. The prominent front and the receding, downwardly produced, non-tuberculate face should be noted. The sides of the face diverge more than commonly while proceeding downward. The face is bare and without pubescence. Upon the abdomen the pile of the second segment is nearly erect and wholly yellow; on the third segment the nearly erect or only subappressed pile of the posterior fourth is black, the remainder yellow; on

the fourth segment all the pile is semi-appressed and is posteriorly black and anteriorly yellow, with more black than yellow. The yellow basal band of flat pile is present on the first segment. The hind femora are shining black with reddish tip; their tibiae brown and darker in the middle. The following is a translation of Bigot's brief description:

MALE

"Length, 8 mm. Black and a little shining and rather thinly yellowish pubescent; on the tibiae there are some black hairs.

"HEAD: Antennae of a deep chestnut brown, lighter brown at the base, upon the upper part and at the extremity; arista testaceous; face shining, with a sparse yellow pubescence. Eyes hairy.

"THORAX: With two longitudinal, grayish, rather obscure stripes; scutellum brown, shining, the extremity yellowish brown; squamae brown; halteres testaceous.

"LEGS: Bases of the tibiae and of the tarsi largely yellowish-brown.

"WINGS: Almost hyaline, the external border largely tinged with brown.

"ABDOMEN: First segment covered with yellowish hairs."

Quichuana bezzii Ceresa

Quichuana bezzii CERESA, 1934, *Atti Soc. Italiana Sci. Nat.*, vol. 73, p. 387, fig. 3.

FEMALE

"HEAD: Eyes hairy, the pile fine, silvery whitish. The ocellar triangle touching the eyes and with black pile. Front black and shining, with sparse, imprinted points and golden yellow pile, these last more dense along the orbit. Antennal tubercle prominent shining black, brownish below. Antennae inserted on the upper half of the head, longer than half of the face; bent a little elbow-like. First segment on the distal part, second upon the whole, with setaceous black pile, both obscure brown; third segment more clear, ferruginous, smooth and suboval. First short, second almost twice the first, third almost twice the second. Arista bare, ferruginous, slightly longer than the antenna. Face

black, with brownish gray pruinosity and sparse, yellowish pile excepting the facial callosity and two, shining stripes that go from the inferior margin of the eyes to the edge of the mouth. Occiput ciliate with pile of a golden yellow, which becomes white on the lower part; mixed in with these are some black hairs. Mouth opening wide. Proboscis brown.

"THORAX: Mesothorax black, with light, metallic reflection, semi-opaque and impressed, as also the scutellum, with a certain regularity and provided with short yellowish pile, with traces of two pruinose stripes which vanish posteriorly. The area adjacent to the humeral calli, including its base, is covered with grayish white pruinosity. Humeral calli and postalar calli dark brown. Mesopleura and pteropleura with yellowish hairs. Ventral part light whitish pruinose. Scutellum shining brownish with apical part more clear and with short black hair; margined with fringe of longer, clear, golden yellow hair. Halteres whitish. Squamae of the same color, with the edge slightly darker and fringe whitish.

"LEGS: Very dark brown, with somewhat long silvery white pile; apical part of the femora and the tibiae of the first and second pairs clearer and ferruginous. Tibiae of the third pair arcuate only in the last third. Posterior femora slightly enlarged, furnished in the last third of the lower margin with irregular, black spines, and with an impression in the depressed area. First four segments of the tarsi decreasing in length; fifth almost equal to the third, provided with black pubescence, which on the lower side is fulvous. Pulvilli yellow; claws yellow, the apical half black.

"WINGS: Non-hyaline, slightly infuscated and iridescent. Anterior part with a dark brown coloration extending from the base of the wing (with the exception of the first and almost all of the second costal cells, which are clear) as far as the end of the submarginal cell. In width this coloration extends from the anterior margin to all of the first basal cell and to the basal part of the subapical cell, thence to all the submarginal cell but not including the

sinuous part. Subcosta and marginal cells more clear at the apices. Spot of the cross vein present. Veins of a brown color.

"ABDOMEN: Of the width of the thorax, elongate, shining black, with a sparse punctation and light bluish reflection, covered with a short, sparse, downy pilosity of a yellowish white color. On the outer margin of the second and third tergites and on the sides of the first and second, the pile is longer and yellowish. First tergite opaque, velvety, and slightly restricted under the base. Venter black.

"Length, 10.5 to 12 mm.; of wing, 8 to 9.5 mm.

"From San Sebastiao, Brazil."

(Translation from original description.)

Quichuana parisii Ceresa

Quichuana parisii CERESA, 1934, Atti Soc. Italiana Sci. Nat., vol. 73, p. 389, fig. 4.

FEMALE

"HEAD: Entirely of a shining black color. Eyes hairy, the pubescence silvery white, longer and more thick than in the preceding species [*bezzii*]. Ocellar callosity with black pile. Ocelli equidistant, the distance between the two basal ones equal to that of each of these from the eyes. Front rather wide, slightly narrowed at the top, with minute silver white pile. Antennal tubercle not prominent. Antennae inserted in the upper half of the head, less long than the half of the face. First segment short, obscure brown, almost black, second a little longer, clear ferruginous; the first two segments with sparse, black, setate pile on the distal margin; third twice the length of the second, dark ferruginous with clear base, glabrous and oval. Arista bare, ferruginous, a little longer than the antenna. Pubescence of the face distinct and a silvery white. Median callosity and two stripes that extend from the inferior angle of the eyes to the edge of the mouth are bare. Occiput widely ciliate with white hair, between which are some sparse black hairs. In the inferior region, there is noticed a little ferruginous spot. Mouth opening wide. Proboscis black.

"THORAX: Mesothorax black with light bluish reflection, provided with whitish

yellowish pile, with wide and fine punctation. Pleura dark brown. A tuft of whitish pile on the mesopleura. Pile black on the pteropleura. Humeral calli and postalar calli dark brown. Scutellum shining, obscure, brown, with yellowish pile which is rather long. Halteres whitish. Squamae of a like color, with golden yellow fringe.

"LEGS: Dark brown, with yellowish white hairs. Apical part of the tibiae and tarsi below with fulvous pubescence. Third pair of legs with the tibiae arcuate and the femora but little enlarged, armed with little black spines on the last third of the lower margin and with a light impression in the depressed area. First segment of the tarsi twice as long as the second; third about equal to the fourth; fifth longer. Pulvilli yellowish. Claws yellow on the basal half, black on apical half.

"WINGS: Non-hyaline, slightly infuscated and iridescent. Anterior part, including the veins, yellow on the basal half and up to a little beyond the small cross vein, and about as far as the top of the lower cross vein; from that point on dark brown, as is also the venation, as far as the extremity of the submarginal cell excepting the sinuous part. Base of the first posterior cell also dark.

"ABDOMEN: (Second and third segments) a little wider than the thorax, suboval, shining black with slight greenish reflection and the same punctation as the thorax, the pubescence formed by silky yellowish white pile, a little longer at the side of the first and second tergites. At the posterior margin of the tergites the hairs are more robust and more yellow; in the central part these hairs are mixed with short black hairs. First tergite on the posterior part with light grayish pruinosity. Venter blackish and pilose.

"Length, 9.1 mm.; wing, 5.8 to 6.5 mm.

"From Sao Paulo, and San Sebastiao, Brazil."

(Translation from original description.)

Quichuana niger Giglio-Tos

Platynochaetus niger GIGLIO-TOS, 1892, Boll. Mus. Zool. Comp. R. Univ. Torino, vol. 7, no. 123, p. 6.

FEMALE

"HEAD: Face almost vertical and bare [*piana*], not distinctly carinate, but obtusely tuberculate in the middle, uniformly black, very shining, sparsely covered with long, sericeous, yellowish hair. Front fairly wide at the base, much narrower above, shining black and sparsely covered with fairly abundant, long, black pile. Fronto-antennal prominence well developed; brownish testaceous beneath. Antennae long and approximately the length of the face; first two joints brownish testaceous beneath, black along the upper margin; third joint oval-elongate, scarcely wider at the base, black. Arista fairly long and testaceous. Proportions of the joints of the antennae 1:1:2. Eyes pilose; among the long hairs, there are some shorter ones, which are silky yellowish.

"THORAX: Black, uniformly sprinkled over with fairly long and numerous, yellowish olivaceous hair. Lower part of thorax black, shining, with a few whitish hairs on the pleura. Scutellum ferruginous, opaque, with long, yellowish olive hairs on the margin.

"LEGS: Black, somewhat pilose, the apices of the femora, bases of the anterior and posterior tibiae, all of the middle tibiae, the first two joints of the middle and posterior tarsi and the last joint of the middle ones of a yellowish color. Claws yellow on the basal half, black on the apical half. Pulvilli yellow.

"WINGS: Clear, brown along the anterior margin; the brown coloration, beginning from the base, extends in length to the extremity of the submarginal cell, in width it extends from the anterior margin to part of the base of the second basal cell, to all of the first basal cell, projecting somewhat beyond the anterior cross vein, from there to all of the submarginal cell with the exception of the sinuous part; marginal cell open; third longitudinal vein strongly incurved toward the first posterior cell, but non-appendiculate; anterior cross vein slightly oblique and placed scarcely beyond the middle of the discal cell. Squamae nearly blackish. Halteres whitish.

"ABDOMEN: Flattened, subtriangular, truncate towards the apex, black, covered with a pubescence formed of sparse and short yellow olivaceous hair, longer at the side of the base of the second segment; on the posterior margin of the first segment, there is abundant sulphur yellow pile forming a transverse fascia which, however, does not reach the sides. Venter ferruginous.

"Length of body, 12-10 mm.; of the wing, 9-7 mm.

"From Orizaba, Mexico."

(Translation from author's description in "Ditteri del Messico," 1893, Mem. R. Accad. Sci. Torino, ser. 2, vol. 43, pp. 338-339, pt. 2, pl. 1, fig. 1, 1a.)

Quichuana rieseli Shannon

Quichuana rieseli SHANNON, 1927, Rev. Soc. Ent. Argentina, vol. 1, no. 3, p. 5.

"Of the same size and proportion as *Q. championi* (Williston), and with the following characteristics:

"HEAD: Smallest diameter of the front (in the region of the ocelli) almost equal to the length of the third joint of the antenna, gradually widening below, being at the base of the antenna equal to the length of the antenna; front amply covered with loose hairs, yellow in color, but black in the ocellar region; antennae obscurely brown, arista brown and nearly of the same length as the antenna and more or less equal to two-thirds of the width of the face. Face almost entirely covered with pollen of a clear color, and clothed with rather long and loose pile, eyes pilose.

"THORAX: Mesonotum obscurely bronzed with a pair of vittae near the middle which appear to be covered with clear pollen; mesonotum yellowish pilose; there is a transverse line interrupted by stiff black hair near the anterior border.

"LEGS: The femur is black, its tips yellow, the tibiae yellow on the basal half and darker on the outer half; tarsi brown, darker towards the apex; the posterior femur has long strong hairs on the ventral surface that are directed downward.

"WINGS: Veins on the outer half of the wing smoky; lower squamae pale yellow,

the external border blackened, its fringe pale yellow.

"ABDOMEN: Dark bronze-colored, the second segment with a large, opaque, triangular spot in the center the base of which abuts on the anterior margin of the tergite; the first tergite with thick pile of a yellow color; the rest of the abdomen is amply covered with short yellowish hair, mixed with some black hairs.

"Length, 10 mm.; wing, 8.5 mm.

"From Tucuman, Argentina (from a *Bromelia*)."

(Translation from original description.)

Quichuana angustiventris Macquart

Merodon angustiventris MACQUART, 1855, Dipteres exotiques nouveaux ou peu connus, suppl. 5, p. 90.

MALE

"Length, 3.5 lines.

"HEAD: Face has pubescence [duvet] of a whitish gray; there is a medial stripe of shining black. Front strongly projecting, with yellowish brown pile changing to white. Antennae black, almost as long as the face, directed to the front, a little pendent; second segment a little elongate, the third three times as long as the second, a little enlarged at the base; arista yellowish brown. Eyes with white pile.

"LEGS: Black, femora with yellow pile, the hind ones thickened, without tooth; a ridge below in the intermediate part of the length; tibiae testaceous at the base; the intermediate ones have yellow pubescence and pile; the posterior ones have yellow hairs anteriorly and black hairs posteriorly; tarsi testaceous.

"WINGS: Clear, anterior border brown; veins normal.

"THORAX AND ABDOMEN: Covered with a thick pile of a beautiful silky yellow, ventral part bare. Abdomen narrower than the thorax.

"Country unknown."

(Translation from original description.)

Quichuana auratus Walker

Figure 2

Helophilus auratus WALKER, 1857, Trans. Ent. Soc. London, new ser., vol. 4, p. 153.

The type of this species was examined by

the writer while visiting the British Museum. It is characterized in the male by the thick golden pile of the front, obscuring the ground color. According to Shannon, who apparently examined the type of *angustiventris* Macquart in the Musée Histoire Naturelle in Paris, this is also true of that species. If the two species are identical, the latter name would have priority. This question cannot be decided at the moment. I have what I believe to be *auratus* Walker from Colombia, and I have redescribed the species in detail from these specimens. The original description of Walker comprises only three lines of type and is not very helpful. Walker's description is as follows:

"MALE: Black, covered with gilded down, which is brightest on the vertex; abdomen aeneous; wings greyish, brown in front, veins black.

"Length of body 4 $\frac{1}{2}$ lines; of the wings 7 lines.

"Valley of the Amazon."

I have redescribed *auratus* below from males and females from Colombia and from middle Rio Ucayali, Peru.

MALE

Length, 9-11 mm.

HEAD: The eyes of the male touch more narrowly than in some species or may even be very narrowly separated. The pile of the vertex is black, that of the upper occiput exceedingly dense, sometimes pale yellow, but more often golden. The upper eye pile is very thick, brownish black above, sparse and silvery below. The front is hidden beneath a thick, bushy hood containing many layers of long, flat, bright golden brassy hairs which reach over the anterior end of the frontal prominence, almost as far as the end of the first antennal segment. The face is gently concave beneath the antennae and retreating. The face has a long, low elevation on the lower half, is bare in the midline, silvery gray pubescent on the sides, with a narrow, vertical, lateral, nearly bare stripe which reaches down only to the middle of the face. The antennae are brown, the second segment lighter; the third segment is blackish and considerably narrower on the

apical third than on the basal two-thirds and longer than the first two segments combined; the arista is pale brown.

THORAX: Mesonotum dully shining, olivaceous black, with a pair of narrow, obscure, grayish vittae in the middle and none laterally. The mesonotum is covered with exceedingly dense, rather long, suberect, golden brassy pile that continues onto the shining blackish scutellum. Upon the notopleura, however, and upon the mesopleura and pteropleura this pile is replaced by opaque tomentum.

LEGS: Femora dark brown with brassy pile; long and bristly below upon the hind femora but short and black upon the apical fifth. Tibiae light brown, almost yellowish upon the middle tibiae and base of anterior and hind pairs. The apex of the hind tibiae is darker, with black pile except medially and ventrally. The tarsi are all dark brown, the middle tarsi somewhat lighter. The pile of the hind metatarsi black.

WINGS: With light brown anterior border, the costa less dark, but darker than the posterior part of the wing.

ABDOMEN: Of the slender type, a little wider basally, shining olivaceous black; the basal margin of the first segment is opaque black, expanding almost suddenly into a medial, opaque vitta that does not reach the posterior margin. There are smaller, obscure, medial, subopaque vittae in the middle of the third and fourth segments. Pile of abdomen unusually long and very dense, erect and yellow and only slightly shiny. There is a band of erect black pile on the posterior margin of the fourth segment, and in the center a single row of black hairs on the posterior margin of the third segment. Hypopygium shining black, its pile black.

FEMALE

HEAD: Similar to that of the male; the pile of the front is erect and golden but is black about the ocelli and upon the lower half of the shining black front. The pollinose area of the front consists of a pair of diagonal, slightly arcuate connecting stripes.

THORAX: Lateral stripes of mesonotum

scarcely evident, the scutellum almost black, the pile of the mesonotum quite scant, short and erect, but golden with the usual opaque tomentum on pleura and posterior calli.

LEGS: Similar to those of the male; femora varying from dark reddish brown to shining black.

WINGS: Similar to those of the male.

ABDOMEN: The medial, opaque black stripe of the second segment is reduced to a triangle and still further reduced on the remaining segments. Yellow erect pile of the abdomen scant and sparse, the bands of black pile upon the posterior borders quite narrow and the pile sparse.

Quichuana quixotea, new species

Figure 6

Related to *auratus* Walker, and readily distinguished in the male by the bright golden pile of the front, which, however, unlike that of the male of *auratus*, is not sufficiently matted and tufted to form the dense, forward lying hood that lies over the front of that species. In the female,

quixotea is distinguished by the small amount of black pile in front of the ocelli, the less prominent fronto-antennal region, the longer and more abundant black pile in front of the antennae, the longer second antennal segment, and the subtriangular spots of pollen upon the front. Length, 11 mm. From Colombia.

Quichuana borgmeieri Lane and Carrera

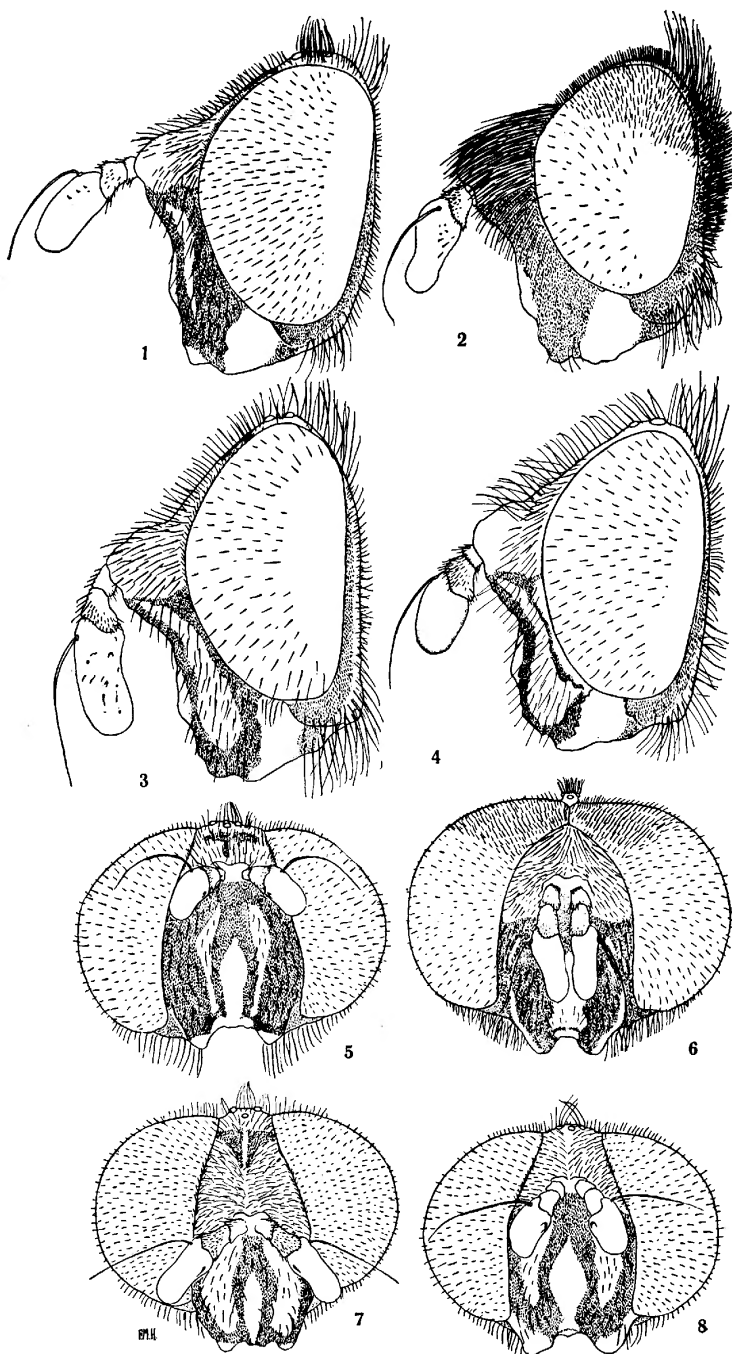
Quichuana borgmeieri LANE AND CARRERA, 1944, Rev. de Ent., vol. 15, pp. 205-208.

This species was published just as the present study was completed. Described from Sao Paulo, Brazil, it has not been seen by the author. It was stated to have been reared from larvae found in pools upon the nodes of bamboo.

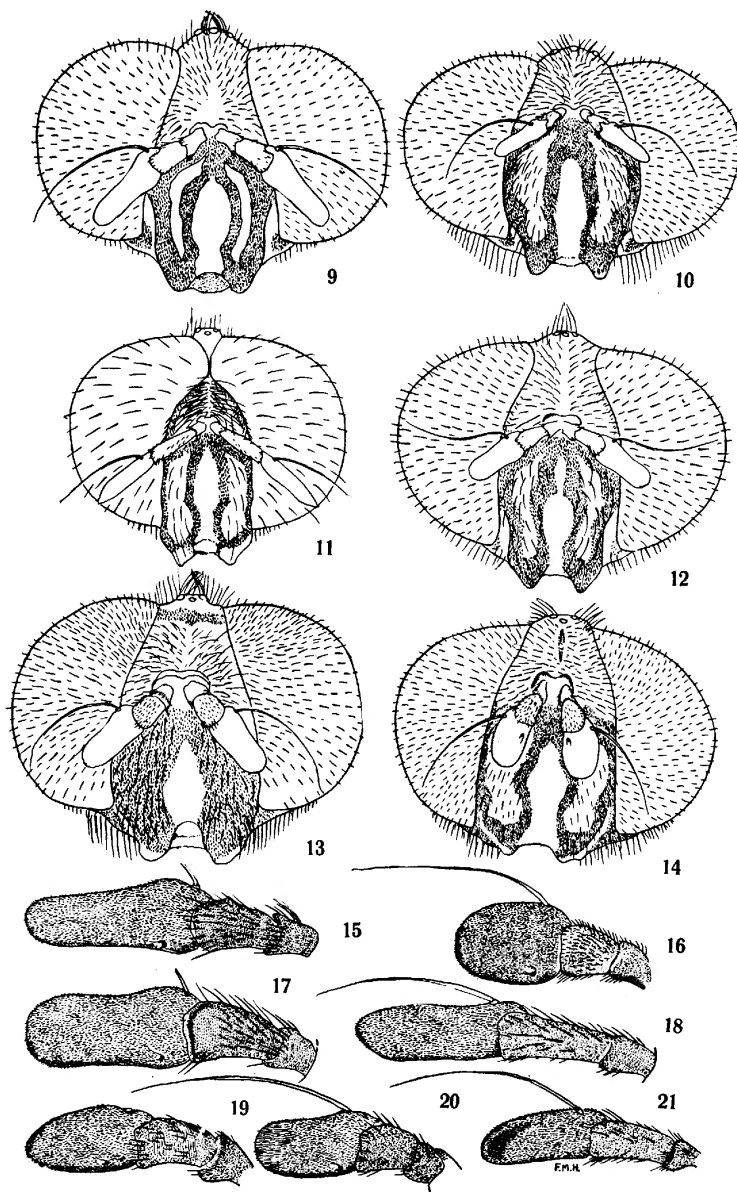
Habromyia barbiellini Ceresa

Quichuana barbiellini CERESA, 1934, Atti Soc. Italiana Sci. Nat., vol. 73, p. 383, figs. 1-2.

The bare eyes relegate this species to the genus *Habromyia*. The facies is not unlike that of some species of *Meromacrus*. Described from San Sebastiao, Sao Paulo, Brazil, from both sexes.



- Fig. 1. *Quichuana sepiapennis* Hull, profile of face of female.
 Fig. 2. *Quichuana auratus* Walker, profile of face of male.
 Fig. 3. *Quichuana simonetta*, new species, profile of face of female.
 Fig. 4. *Quichuana cestus*, new species, profile of face of female.
 Fig. 5. *Quichuana sepiapennis* Hull, front of face of female.
 Fig. 6. *Quichuana quixotea*, new species, front of face of male.
 Fig. 7. *Quichuana simonetta*, new species, front of face of female.
 Fig. 8. *Quichuana pogonosa* Fluke, front of face of female paratype.



- Fig. 9. *Quichuana knabi* Shannon, front of face of female type.
 Fig. 10. *Quichuana sylvicola* Knab, front of face of female type.
 Fig. 11. *Quichuana inca* Shannon, front of face of male type.
 Fig. 12. *Quichuana picadoi* Knab, front of face of female type.
 Fig. 13. *Quichuana calathea* Shannon, front of face of female.
 Fig. 14. *Quichuana cestus*, new species, front of face of female.
 Fig. 15. *Quichuana knabi* Shannon, antenna of female type.
 Fig. 16. *Quichuana cestus*, new species, antenna of female.
 Fig. 17. *Quichuana picadoi* Knab, antenna of female type.
 Fig. 18. *Quichuana inca* Shannon, antenna of male type.
 Fig. 19. *Quichuana championi* Williston, antenna of male type.
 Fig. 20. *Quichuana subcostalis* Walker, antenna of female type.
 Fig. 21. *Quichuana cincta* Bigot, antenna of male type.

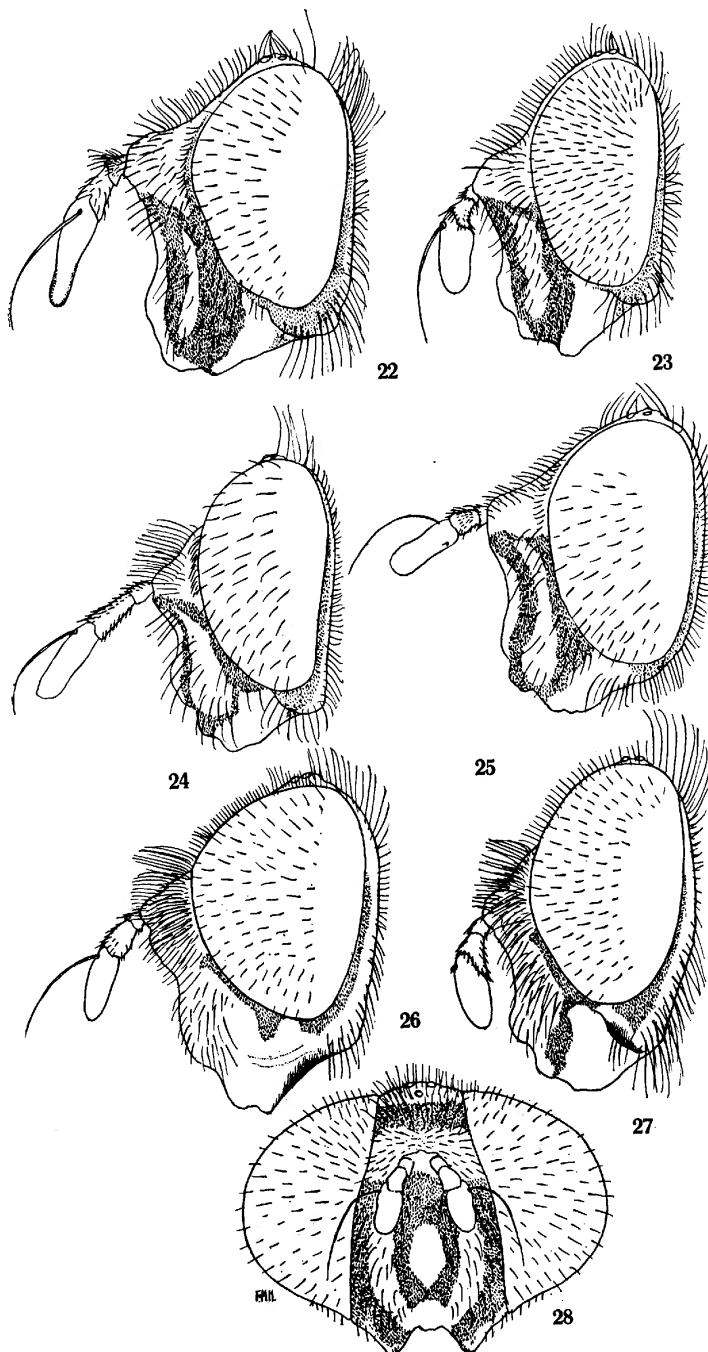


Fig. 22. *Quichuana knabi* Shannon, face profile of female type.
 Fig. 23. *Quichuana sylvicola* Knab, face profile of female type.
 Fig. 24. *Quichuana inca* Shannon, face profile of male type.
 Fig. 25. *Quichuana picador* Knab, face profile of female type.
 Fig. 26. *Quichuana cincta* Bigot, face profile of male type.
 Fig. 27. *Quichuana championi* Williston, face profile of male type.
 Fig. 28. *Quichuana subcostalis* Walker, front of face of female type.

